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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/810,499	03/19/2001	Harunobu Nakagawa	100353-00049	9664

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EXAMINER	
YOHA, CONNIE C	
ART UNIT	PAPER NUMBER
2818	

DATE MAILED: 11/20/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/810,499	NAKAGAWA ET AL.	
	Examiner	Art Unit	
	Connie c. Yoha	2818	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 October 2002* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-12* is/are pending in the application.

4a) Of the above claim(s) *10-12* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2 .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

1. This office acknowledges receipt of the following items from the Applicant:

Papers submitted under 35 U.S.C. 119(a)-(d) have been placed of record in the file.

Information Disclosure Statement (IDS) filed on 3/19/01 was considered.

2. Claims 1-12 are presented for examination.

3. Claims 1-9 is directed to the group of claims elected for examination (see paper #6).

4. Claims 1-9 are pending.

Drawings

5. The drawings are objected to because of the following minor informalities:

Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g).

Correction is required.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless --
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 1-3 are rejected under 35 U.S.C. 102(b) as being anticipated by Tanaka, Pat. No. 6011720.

With regard to claim 1, Tanaka discloses memory device comprising: a plurality of input/output terminals (fig. 4, 22); a memory cell array (fig. 1, 4) which are divided into blocks (fig. 4, 12) respectively corresponding to said input/output terminals such that only one of the blocks corresponds to a given one of said input/output terminals (col. 3, line 29-40); sense amplifiers, which are connected to the blocks at a side thereof, and amplify data of said memory cell array (fig. 4, 18); decoders operate as switches which are respectively connected to said sense amplifiers (fig. 4, 23) (col. 3, line 40-43)); and signal lines which connected said sense amplifiers to a corresponding one of said input/output terminals via the switches (fig. 1, signal line that run from bit line 13 to the I/O driver 22) (col. 3, line 50-54).

With regard to claim 2, Tanaka discloses wherein each of the blocks is divided into a plurality of pages (fig. 4, 31) (col. 7, line 54-56), and a selected one of said switches is made conductive in response to an input address so as to select data of a corresponding page to be output from said semiconductor memory device (col. 8, line 15-21).

With regard to claim 3, Tanaka discloses memory cell array includes flash memory cells (col. 1, line 7-11).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claim 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka, Pat. No. 6011720 in view of Takeuchi et al, Pat. No. 5986933.

With regard to claim 4, Tanaka, as applied in prior rejection, disclosed all claimed subject matter except wherein data of said memory cell array is erased by one unit of erasure, wherein more than one of said blocks are put together to form the unit of erasure. However, Takeuchi discloses wherein data of said memory cell array is erased by one unit of erasure, wherein more than one of said blocks are put together to form the unit of erasure (col. 9, line 57-59) (col. 10, line 31-35). It would have been obvious for one having ordinary skill in the art at the time the invention was made to use the erasure operation of Takeuchi in place of Tanaka in order to erase the memory cells by the unit. Such erasure operation will reduce erasure cycle time, of which operation time and operation costs of the flash memory device can be saved.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 5-9 are rejected under 35 U.S.C. 102(b) as being anticipated by Takeuchi et al, Pat. No. 5986933.

With regard to claim 5, Takeuchi discloses memory device which allows data of a plurality of pages to be read from a memory cell array and stored in sense amplifiers, and allows data of a selected page to be read from the sense amplifiers and output to an exterior of said semiconductor memory device (col. 6, line 36-43, 49-50)(col. 9, line 34-35), comprising: memory cell areas storing data (fig. 5, Sub-cell array A, B, C, D) to be input from and output to one common input/output terminal (fig. 5, I/O bus), said memory cell areas respectively corresponding to the plurality of pages and provided adjacent to each other (col. 9, line 34-35) (fig. 11, PAGE1A, PAGE2A, PAGE3A, PAGE4A), wherein the sense amplifiers corresponding to said memory cell areas are arranged adjacent to each other (fig. 5, SA_A-SA_D); and signal lines which connect the sense amplifiers corresponding to said memory cell areas to the common input/output terminal (col. 6, line 36-43).

With regard to claim 6, Takeuchi discloses wherein the memory cell array includes flash memory cells (col. 2, line 1-12).

With regard to claim 7, Takeuchi discloses wherein data of said memory cell array is erased by one unit of erasure, wherein the unit of erasure is formed by putting together the memory cell areas for a plurality of input/output terminals (col. 9, line 57-59) (col. 10, line 31-35).

With regard to claim 8, Takeuchi discloses memory device which allows data of a plurality of pages to be read from a memory cell array and stored in sense amplifiers, and allow data of a selected page to be read from the sense amplifiers and output to an exterior of said memory device (col. 6, line 36-43, 49-50) (col. 9, line 34-35), comprising

memory cell areas (fig. 5, SUB-CELL ARRAY A, B, C, D) storing data to be input from and output to one common input/output terminal (fig. 5, I/O bus), said memory cell areas respectively corresponding to the plurality of pages and provided adjacent to each other (col. 9, line 34-42).

With regard to claim 9, Takeuchi discloses memory device which allows data of a plurality of pages to be read from a memory cell array and stored in sense amplifiers, and allows data of a selected page to be read from the sense amplifiers and output to an exterior of said memory device (col. 6, line 36-43, 49-50) (col. 9, line 34-35), comprising: signal lines which connect one common input/output terminal to the sense amplifiers corresponding to the one common input/output terminal (col. 6, line 40-43), wherein the sense amplifiers corresponding to the one common input/output terminal are arranged adjacent to each other (fig. 5, SA_A-SA_D).

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicants' disclosure. Hotta (5751657) disclose a memory device.

10. When responding to the office action, Applicants' are advised to provide the examiner with the line numbers and page numbers in the application and/or references cited to assist the examiner to locate the appropriate paragraphs.

11. A shortened statutory period for response to this action is set to expire 3 (three) months and 0 (zero) day from the date of this letter. Failure to respond within the period for response will cause the application to become abandoned (see MPEP 710.02 (b)).

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to whose telephone number is (703) 306-5731. The examiner can normally be reached on Mon. - Fri. from 8:00 A.M. to 5:30 PM. The examiner's supervisor, David Nelms, can be reached on (703) 308-4910. The fax phone number for this Group is (703) 308-7722. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 305-0956.

C. Yoha

November 11, 2002

CONNIE C. YOHA

PATENT EXAMINER

ART UNIT 2818